

WHAT IS CLAIMED IS:

1. An exhaust gas purification device for an internal-combustion engine, said device comprising:

5 a particulate filter disposed in an exhaust system of the engine for trapping particulates contained in the exhaust gas;

 timing determining means for determining a regeneration timing to remove the particulates trapped by the particulate filter;

 intake air amount reducing means for reducing an intake air
10 amount to be taken into the internal-combustion engine in response to the determination of the regeneration timing;

 combustion maintaining means for maintaining combustion in the engine in a desired condition in response to reduction of the intake air amount; and

15 heating means for heating the particulate filter to regenerate the particulate filter.

2. An exhaust gas purification device of claim 1, wherein said combustion maintaining means performs a feedback control to converge an air/fuel
20 ratio in the exhaust system of the internal-combustion engine to a predetermined desired air/fuel ratio when the intake air amount is reduced by the intake air amount reducing means.

3. An exhaust gas purification device of claim 1, wherein the device is
25 configured to supply unburned fuel into the exhaust gas when the heating means is activated.

4. An exhaust gas purification device of claim 3, wherein the device is configured to supply unburned fuel into the exhaust gas when a
30 predetermined time elapses after the heating means started to be

activated.

5. An electronic control unit for an internal-combustion engine having a particulate filter disposed in an exhaust system of the engine for trapping
5 particulates contained in the exhaust gas, said electric control unit being programmed to:

determine a cleaning timing to remove the particulates trapped by the particulate filter;

10 reduce an intake air amount to be taken into the internal-combustion engine in response to the determination of the cleaning timing;

maintain combustion in the engine in a desired condition in response to the reduction of the intake air amount; and

heat the particulate filter to clean the particulate filter.

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6. The electronic control unit of claim 5, wherein said electric control unit is further programmed perform a feedback control to converge an air/fuel ratio in the exhaust system of the internal-combustion engine to a predetermined desired air/fuel ratio when the intake air amount is reduced
20 by the intake air amount reducing means.

7. An electronic control unit of claim 5, wherein said electric control unit is programmed to supply unburned fuel into the exhaust gas when the particulate filter is heated.

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8. An electronic control unit of claim 7, wherein said electronic control unit is programmed to supply unburned fuel into the exhaust gas when a predetermined time elapses after the particulate filter started heating.

30 9. A method for purifying an exhaust gas for an internal-combustion engine

having a particulate filter disposed in an exhaust system of the engine for trapping particulates contained in the exhaust gas, comprising the step of:

determining a cleaning timing to remove the particulates trapped by the particulate filter;

5 reducing an intake air amount to be taken into the internal-combustion engine in response to the determination of the cleaning timing;

maintaining combustion in the engine in a desired condition in response to the reduction of the intake air amount; and

10 heating the particulate filter to clean the particulate filter.

10. A method of claim 9, further comprising the step of performing a feedback control to converge an air/fuel ratio in the exhaust system of the internal-combustion engine to a predetermined desired air/fuel ratio when
15 the intake air amount is reduced by the intake air amount reducing means.

11. A method of claim 9, further comprising the step of supplying unburned fuel into the exhaust gas when the particulate filter is heated.

20 12. A method of claim 11, wherein the unburned fuel is supplied to the exhaust gas when a predetermined time elapses after the particulate filter started heating.